



Original Research Article

A study on impact of sensitisation programme on standard precautions among MBBS intern students

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Abstract

Introduction: Standard Precautions in hospital is necessary for the safety of patients as well as healthcare worker. Health care students plays a major role in the prevention of Healthcare-associated infection.

Aims and Objective: The present study was aimed to assess the impact of sensitization programme on Standard Precautions among MBBS Intern Students in a Tertiary Care Hospital.

Materials and Methods: This institutional cross sectional study was conducted at Shridevi Institute of Medical Sciences and Research Hospital, Tumkur, Karnataka in the month of June 2021 .Sensitization programme was conducted for MBBS Interns students from members of Hospital Infection Control Committee. Self-administered questionnaire was used to collect data from MBBS Interns Students before and after sensitization programme on Standard precautions

Results: A total of 116 MBBS intern students who were completed their MBBS graduation in our hospital were included in this study. Among them 67 (59.82%) were females and 49(42.16%) were males. All of them were in the age group of 21- 25 years. In the present study before sensitization programme, 24.13% of MBBS intern students were not aware of infection prevention control practices and around 40% MBBS intern students does not know proper segregation of biomedical waste. But after sensitization programme all of them became aware of infection control practices and 98.27% MBBS intern students were segregated biomedical waste properly.

Conclusion: This study suggests need for organizing regular sensitization programme on standard precaution for health care students to reduce the health care associated infections.

Keywords: Health care associated infections, Health care students, Standard precautions, Sensitisation program.

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1. Introduction

Healthcare-associated infection (HCAI) results in increased morbidity and mortality as well as health care costs world wide.¹ It has been estimated that the risk of healthcare-associated infections is 2-20 times higher in developing countries compared to developed countries and 5-10% of patients admitted to hospital in developed countries acquire these infections.² Many of these pathogens are multidrug resistant and are able to survive in the environment for a long period of life.³ In Most of the HCAI are caused by the transmission of pathogens from one patient to another especially by healthcare workers (HCWs) who failed to practice infection prevention measures consistently.⁴

Lack of Awareness and knowledge on standard precautions among Health care worker has been linked to the worsening of the health care delivery outcomes.⁵ An Infection Prevention and Control programme with dedicated team and governance, is crucial to reduce the spread of infectious diseases in the hospital setting.⁶ A well organized sensitization programme on standard precaution can prevent 25-50% of Healthcare-associated infection as stated by Hospital Infection Society of India.⁷ The World Health Organisation also recommends the implementation of IPC program in every acute healthcare facility owing to the substantial evidence on the decrease in health care associated infections in association with effective functioning of the Hospital Infection Control Committee on IPC program.⁸

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Finding from other studies also have revealed that adherence to standard precaution can reduce the incidence of Health care associated infections by up to 70% in health care settings.⁹

It is vital for health care students (HCS), patient attendants and patient themselves to be sensitized to principles of nosocomial infection. More importantly these skills would be useful for health care students (HCS) as they begin clinical practice.¹⁰ Sensitisation of all involved health care personnel is the first step toward a healthy work environment. Therefore this study was aimed to assess the basic level of awareness on and to evaluate the effectiveness of sensitization programme on standard precautions among MBBS Intern Students.

2. Materials and Methods

The study was conducted at Shridevi Institute of Medical Sciences and Research Hospital, Tumkur, Karnataka, South India in the month of June 2021.

2.1. Study design

Quantitative descriptive cross-sectional study

2.2. Study Population

All MBBS Intern students who works in Shridevi Institute of Medical Sciences and Research Hospital.

2.3. Sample size and Sampling technique

A total of 116 MBBS students who were completed their MBBS graduation and works in our hospital as a intern were included in this study. Among 116 MBBS intern 67 (59.82%) were females and 49(42.16%) were males. All of them were belong to the age group of 21- 25 years.

2.4. Data collection procedure

Sensitisation programme on Standard precautions for MBBS intern students was a part of the various regular training programs scheduled under HICC training program. This sensitization programme was conducted by members of HICC in accordance with Centers for Disease Control and Prevention and WHO guidelines. The main components of Sensitization programme on Standard Precautions includes hand hygiene, personal protective equipments, needle stick injury, spill management and biomedical waste management.¹¹ The pre-test was conducted for the participants to know their basic level of awareness on Standard Precautions with structured questionnaire. The structured questionnaire was prepared by members of HICC of our institute. The session was aimed by giving theoretical knowledge and practical demonstration on Standard precautions. Impact of the sensitization programme was assessed by posttest through the same set of questionnaire as used in the pre-test.

2.5. Data analysis

The collected data was entered into a Microsoft Excel spreadsheet and statistical analysis was performed using SPSS version 23.0. Pre-test and post-test was evaluated by comparison of mean, standard deviation and paired samples t test analysis of each domain. For all test, significance level was kept at $p < 0.05$

2.6. Ethical considerations

Informed consent was obtained from MBBS intern students who were willing to become participants in this study. All ethical norms were considered through out the study. Confidentiality was ensured to protect the ethical rights of all the participants.

3. Results

3.1. Awareness towards Standard precaution before sensitization programme

Before sensitization programme on Standard Precautions 28 (24.13%) MBBS intern students were not aware of infection prevention control practices in our hospital and 54(46.55%) of MBBS intern students assumes that saliva, sweat and tears are more infectious than blood. In the present study most 79 (68.10%) of MBBS intern students were thought that hand washing was the most effective method, but few 27 (23.27%) of participants were thought that wearing caps, masks and gowns was the most effective method to prevent HCAI. Awareness on needle stick injury and knowledge about proper segregation of biomedical waste among participants was 103(88.79%) & 69(59.48%) before conducting sensitisation programme. **(Table 1)**

3.2. Impact of sensitization programme on Standard precautions:

In the present study, all 116 (100%) of them became aware of infection prevention control practices in the hospital and also all of them became aware of needle stick injury protocol after sensitization programme. Among 116 MBBS interns, 101(87.06%) came to know that blood is infectious and 107(92.24%) were became aware that hand washing is best method to prevent health care associated infections after sensitization programme. Out of 116 medical interns, 114 (98.27%) were learnt proper segregation of biomedical waste at the end of sensitization programme on Standard Precautions. **(Table 2)**

3.3. Knowledge about infection control practices before and after sensitisation

We assessed the level of knowledge on infection control practices among all 116 medical interns through structured questionnaire. the participants who gave correct answers for 3 or more than 3 questions out of 5 questions from the structured questionnaire was considered as adequate knowledge. If the participants gave correct answers for 2 or

less than 2 questions out of 5 questions from the structured questionnaire was considered as Inadequate knowledge.(Table 3) In this study mean and standard deviation of pre-test and post-test was compared for all domains. A paired samples t test was analysed to study the impact of sensitisation programme on standard precautions. The score in infection control practices domain was pre-test (M=0.76, SD=0.43) and in post-test (M=1.00, SD=0.00); t=6.049. Similarly for infectious materials domain, pre-test

score was (M= 0.53,SD=0.50) and post-test score was (M=0.87, SD=0.34); t=7.632 .In hand hygiene domain, pre-test score was (M=0.68,SD=0.47) and post-test score was (M=0.92, SD=0.27) & t= 6.0490.The pre-test score in Needle stick injury protocol domain was (M=0.89,SD=0.32) and post-test score was (M=1.00, SD=0.00); t=3.809. And also pre-test score in segregation of biomedical waste domain was (M=0.59, SD=0.49) and post-test score was (M= 0.98, SD=0.13); t=8.537.(Table 4)

Table 1: Infection prevention practice questions for MBBS intern students who gave correct answers before sensitization programme. (N=116)

Variable	Respondents with correct answers N (%)
1. Are you aware of hospital infection control practice in your hospital?	
A. Yes	88(75.86%)
B. No	28(24.13%)
2. Which of the following from the patient do you assume to be infectious?	
A. Blood	62(53.44%)
B. Saliva	38(32.75%)
C. Sweat	5(4.31%)
D. Tears	11(9.48%)
3. Which is single most effective method to prevent health care associated infections?	
A. Hand washing properly	79 (68.10%)
B. Wearing caps ,masks and gowns	27 (23.27%)
C. Appropriate use of antibiotics	1 (0.86%)
D. Visitor management	8 (6.89%)
4. If you sustain a needle stick injury you must	
A. Put on gloves	3 (2.58%)
B. Squeeze it and cover it with water proof plaster	10(8.6%)
C. Ignore it	0 (0%)
D. Wash the wound with running water and soap and report it immediately	103 (88.79%)
5. Where should infectious waste from patients be disposed of	
A. Yellow bag	69 (59.48%)
B. Black bag	5 (4.31%)
C. Red bag	29 (31.03%)
D. Blue bag	6 (5.17%)

Table 2: Infection prevention practice questions for 2 medical interns who gave correct answers after sensitization programme. (N=116)

Variable	Respondents with correct answers N (%)
1. Are you aware of hospital infection control practice in your hospital?	
C. Yes	116 (100%)
D. No	0 (0%)
2. Which of the following from the patient do you assume to be infectious?	
E. Blood	101 (87.06%)
F. Saliva	15 (12.93%)
G. Sweat	0(0%)
H. Tears	0 (0%)
3. Which is single most effective method to prevent health care associated infections?	
E. Hand washing properly	107(92.24%)
F. Wearing caps, masks and gowns	8(6.89%)
G. Appropriate use of antibiotics	0(0%)
H. Visitor management	1(0.86%)

4. If you sustain a needle stick injury you must	
E. Put on gloves	0 (0%)
F. Squeeze it and cover it with water proof plaster	0(0%)
G. Ignore it	0 (0%)
H. Wash the wound with running water and soap and report it immediately	116 (100%)
5. Where should infectious waste from patients be disposed of	
E. Yellow bag	114 (98.27%)
F. Black bag	0(0%)
G. Red bag	2(1.72%)
H. Blue bag	0(0%)

Table 3: Level of knowledge about infection control practices before and after sensitisation

Level of Knowledge	Before sensitization	After sensitization
Adequate	81(69.8 %)	111(95.5%)
Inadequate	35(30.17%)	5(4.31%)

Table 4: Comparison of Mean, Standard deviation and paired sample t test analyses for each domains.

Domain	Mean		Standard deviation		95%confidence interval of the difference		t	Degree of freedom	p value
	Pre-test	Post-test	Pre-test	Post-test	Lower	Upper			
Infection control practices	0.76	1.00	0.43	0.00	-0.32	-0.16	6.0490	115	<.005
Infectious materials	0.53	0.87	0.50	0.34	-0.42	-0.25	7.6320	115	<.005
Hand Hygiene	0.68	0.92	0.47	0.27	-0.32	-0.16	6.0490	115	<.005
Needle stick injury protocol	0.89	1.00	0.32	0.00	-0.17	-0.05	3.8098	115	<.005
Segregation of Biomedical waste	0.59	0.98	0.49	0.13	-0.48	-0.30	8.5374	115	<.005

4. Discussion

Health care associated infection is a health hazard. Health care workers are the main source of health care associated infection.¹² Inadequate knowledge on health hygiene, personal protective measures, and other IPC measures contribute to disease transmission among health care workers.¹³ It is important to minimize the risk of spread of infection to patients and staff in hospital. Preventions of nosocomial infection is the responsibility of all individuals and health care providers. This study was conducted to know the basic level of awareness on standard precautions and impact of sensitization programme on Standard Precautions among MBBS Intern students.

In our study majority of MBBS interns (75%) before sensitisation programme and all (100%) of them become aware of components of standard precautions after sensitization programme. While study conducted by Arora et al in India,¹⁴ observed that majority (94.7%) were aware about standard precautions. In a study by Amoran et al¹⁵ found that, majority (77.9%) of health care workers were able to correctly describe Standard precautions and IPC.

In the present study, 53.44% participants assumes that blood is infectious before sensitisation but 87.06% participants came to know that blood is highly infectious

material after sensitisation. This is similar to the study conducted by Iliyasu et al¹⁶ only 44.4% of Health care workers were aware of the risks of infection following exposure to Human Immunodeficiency Virus, Hepatitis B Virus & Hepatitis C Virus infected blood respectively.

One of the most important components of standard precaution is hand hygiene. In this study, (92.24%) participants after sensitization programme correctly identified hand washing is single best effective method to prevent health care associated infections. Where as Iliyasu et al¹⁶ in their study found that most (87.9%) health care workers (HCW) correctly identified as hand hygiene as the effective method to prevent Health care associated infection. In the present study 88.79% participants before and all of them after sensitization programme became aware of became needle stick injury protocol. Arora et al¹⁴ in their study found that only 50.2% HCWs gave correct answers regarding disease transmission through NSI(Needle stick Injury). Where as only 2.1% of HCWs were aware of National Injection safety policy in the study by Amoran et al.¹⁵ Similarly Ogonia et al¹⁷ in their study observed that majority of HCW's had poor knowledge of injection safety and 50% of participants were ignorant of the WHO's recommendation on safe injection practices. While a study by Shrestha N M et al found that nearly all (98.8%) of the respondents use soap

and water after accidental prick by sharps contaminated instruments.

Only 59.48% MBBS intern students before and 98.7% after sensitization programme answered that infectious waste from patients should be disposed of yellow bag which is similar to the study findings of Shresta NM et al² that 50.6% respondents before and cent percent after sensitization programme answered proper waste disposal system.

In a study by Atika Akram et al¹² found that 80% majority of the respondents had adequate level of knowledge. In Qatar Ibrahim was conducted a cross sectional interview-based survey found that 48.4% had adequate knowledge about standard isolation precautions.¹⁸ In the present study adequate knowledge in MBBS intern student before was 81(69.8 %) and after sensitization was 111(95.5%). This could be due to effective institutional protocol, colourful posters and visual aids for infection prevention behavior.

The main aim of sensitization programme on standard precautions for health care students in our institute was to improve their knowledge and awareness on infection prevention control practices which in turn will lead to reduction of health care associated infections. The mean score of infection control practices domain in post-test (M=1.00) was more compared to pre test (M=0.76). Similarly post-test score (M=0.87) was more for infectious materials domain than pre-test score (M= 0.53). The Post-test score in other domains like hand hygiene (M=0.92), needle stick injury protocol domain (M=1.00) and in segregation of biomedical waste domain (M= 0.98) were greater than pre test score. There was a statistically improvement in post-test scores of all domains. The standard deviation is reduced in post-test when compared to pre-test. Analysis of paired samples t test showed positive impact on infection prevention control practices among MBBS intern students after sensitization programme on standard precautions in the present study. This is similar to the study conducted by Goyal M and Chaudhry D.¹⁰ In their study on impact of educational training programs on knowledge of health care students, they observed that there was a significant difference in the scores of pre-tests (M=37.30) and post-tests (42.03). They also observed that MBBS students had the highest mean score (out of 50) of 38.10, BSc nursing students had mean score of 36.82, BDS students had mean score of 34.61. Suchitra and Lakshmi in their study advised a yearly educational program on standard precautions for retention of knowledge among various categories of health care workers. It applies for healthcare students also. Reinforcement of the principals of standard precautions among health care students will significantly reduce morbidity and mortality rate due to health care associated infections as these students are the future of health care manpower.¹⁹

A limitation of this study is that only MBBS intern students were involved further studies are essential to study the impact of sensitization programme on standard

precautions among different categories of health care students who works in the hospitals.

5. Conclusion

Health care students are the frontier of the fight against this contagious infectious disease with a higher risk exposure than the general population Sensitisation programme on the principles and infection practices shall be given to all Health care students to prevent the transmission of Health care associated infections. These education and training programmes should be conducted regularly. However, new updates of Infection Control guidelines are to be added to upcoming trainings. So this study suggests that active role of an infection control team, continuing education courses and refresher trainings, monitoring, improvisation of the existing resources which were necessary for successful implementation of IPC practices in hospitals.

6. Source of Funding

None.

7. Conflicts of Interest

There are no conflicts of interest.

8. Acknowledgment

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